

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
27 October 2005 (27.10.2005)

PCT

(10) International Publication Number
WO 2005/100900 A1

(51) International Patent Classification⁷: F28F 9/02,
F25B 1/00, 39/02, F28F 1/02

(21) International Application Number:
PCT/JP2005/007355

(22) International Filing Date: 11 April 2005 (11.04.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2004-116418 12 April 2004 (12.04.2004) JP
60/562,532 16 April 2004 (16.04.2004) US
2005-049946 25 February 2005 (25.02.2005) JP

(71) Applicant (for all designated States except US): SHOWA DENKO K.K. [JP/JP]; 13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo, 1058518 (JP).

(72) Inventor; and

(75) Inventor/Applicant (for US only): ICHIYANAGI, Shigeharu [JP/JP]; c/o SHOWA DENKO K.K., OYAMA

REGIONAL OFFICE, 480, Inuzuka 1-chome, Oyama-shi, Tochigi, 3238678 (JP).

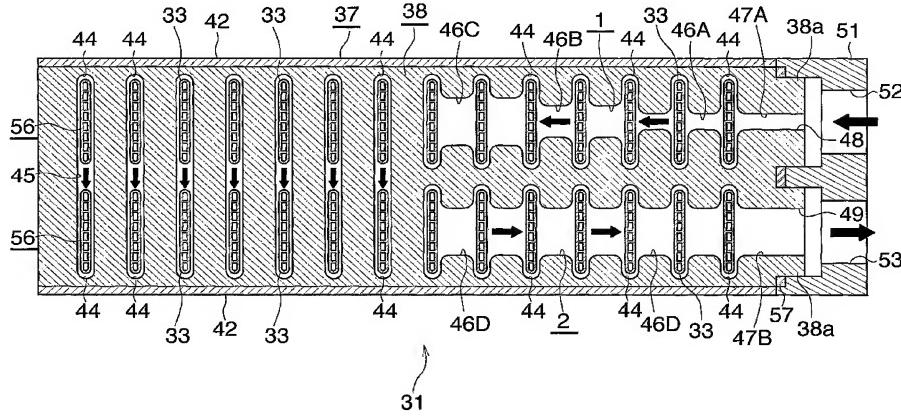
(74) Agents: HIBI, Norihiko et al.; c/o KISHIMOTO & CO., 3rd Floor, Inaba Building, 13-18, Nishishinsaibashi 1-chome, Chuo-ku, Osaka-shi, Osaka 542-0086 (JP).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: HEAT EXCHANGER



(57) Abstract: An evaporator 30 has a header tank 31 comprising a header forming plate, a tube connecting plate 37 and an intermediate plate 38. The header forming plate is provided with outward bulging portions. A plurality of tube insertion holes are formed in the tube connecting plate 37. Communication holes 44 are formed in the intermediate plate 38 for causing the tube insertion holes to communicate with the interior of the corresponding outward bulging portion therethrough. At least one of the outward bulging portions serves as a refrigerant passing outward bulging portion for a refrigerant to flow therethrough longitudinally of the bulging portion. All the communication holes 44 in communication with the refrigerant passing bulging portion are held in communication by communication portions 46A to 46C for the communication holes 44 and the communication portions 46A to 46C to provide a refrigerant passageway 1. The refrigerant passageway 1 is altered in cross sectional area along the longitudinal direction thereof by adjusting the width of the communication portions 46A to 46C. The evaporator 30 is reduced in the number of components, can be fabricated by efficient work and exhibits improved heat exchange performance.

WO 2005/100900 A1



Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.